L Number	Hits	Search Text	DB	Time stamp
1	1827545	work station	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/24 12:18
2	166178	(work station) and circular	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/24 12:19
3	404	((work station) and circular) and tiered	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/24 12:20
4	363	((work station) and circular) and wheelchair	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2002/07/24 12:20

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号

特開平8－33693

(43)公開日　平成８年(1996)２月６日

(51)Int.Cl.[6]	識別記号	庁内整理番号	ＦＩ	技術表示箇所
Ａ６１Ｈ　33/00	３１０　Ｇ	7507－4C		

審査請求　未請求　請求項の数５　ＦＤ　（全　６　頁）

(21)出願番号　特願平6－193603

(22)出願日　平成６年(1994)７月25日

(71)出願人　000103471
オージー技研株式会社
岡山県岡山市海吉1835番地７

(72)発明者　島村　賢治
岡山県岡山市平井３丁目1005－９

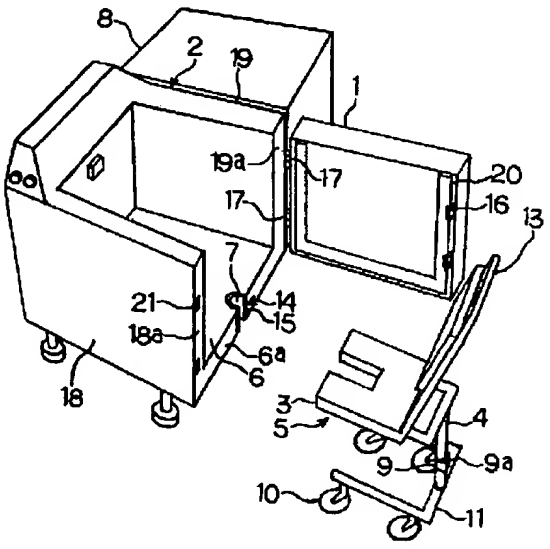
(72)発明者　高岩　康幸
岡山県倉敷市帯高532

(54)【発明の名称】　差込式入浴装置

(57)【要約】

【目的】　扱いが容易な車椅子を有する差込式入浴装置を提供することにある。

【構成】　正面にドア（１）を設けた浴槽（２）と、座部（３）を支柱（４）で支持した車椅子（５）とからなり、前記支柱（４）が浴槽（２）の底壁（６）とドア（１）で挟まれた状態で該ドア（１）は閉塞されて浴槽（２）とドア（１）はシールされ、底壁（６）の正面端には車椅子（５）の支柱（４）が嵌まる切欠部（７）が形成され、切欠部（７）及び／又は支柱（４）に、軟材（１５）でなるシール機能体（１４）が取着される差込式入浴装置。



1

【特許請求の範囲】

【請求項1】　一側壁にドア（1）を設けた浴槽（2）と、座部（3）を支柱（4）で支持した車椅子（5）とからなり、前記支柱（4）が浴槽（2）の底壁（6）とドア（1）で挟まれた状態で該ドア（1）は閉塞されて浴槽（2）とドア（1）はシールされることを特徴とする差込式入浴装置。

【請求項2】　支柱（4）が接触する底壁（6）の端面には、該支柱（4）が嵌まる切欠部（7）が形成されることを特徴とする請求項1記載の差込式入浴装置。

【請求項3】　切欠部（7）と支柱（4）の接触部において、切欠部（7）及び／又は支柱（4）に、軟材（15）でなるシール機能体（14）が取着されることを特徴とする請求項2記載の差込式入浴装置。

【請求項4】　切欠部（7）に、液体又は気体を入れて膨張させる膨張体（22）でなるシール機能体（14）が取着され、浴槽（2）に、前記膨張体（22）に液体又は気体を供給する供給機（23）が設けられたことを特徴とする請求項2記載の差込式入浴装置。

【請求項5】　底壁（6）上面から延設され該切欠部（7）を覆う可撓部材（24）と、支柱（4）に水平状に設けられ前記可撓部材（24）を受ける受け体（25）とからなるシール機能体（14）が設けられ、前記可撓部材（24）には支柱（4）が嵌まる可撓部材切欠部（26）が形成され、可撓部材（24）において、ドア（1）の閉塞時にシール体（20）に接触する部分は、シール体（20）の押圧を受け止め該シール体（20）との間の水密を図る硬質部（12）であることを特徴とする請求項2記載の差込式入浴装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、身体障害者や養護老人等のための入浴装置に関する。

【0002】

【従来の技術】従来の技術として実開平3－16932号公報に、門形フレーム、椅子部、及び車輪とからなる車椅子と、扉を設けた浴槽との組み合わせで構成された入浴装置が開示されている。

【0003】

【発明が解決しようとする課題】前記した従来装置は、門形フレームの両側立枠が浴槽の外側部に位置するので、車椅子が大形になり、扱いにくいという欠点があった。本発明の目的は、上記欠点を解決したものであり、扱いが容易な車椅子を有する差込式入浴装置を提供することにある。

【0004】

【課題を解決するための手段】即ち本発明は、一側壁にドア（1）を設けた浴槽（2）と、座部（3）を支柱（4）で支持した車椅子（5）とからなり、前記支柱（4）が浴槽（2）の底壁（6）とドア（1）で挟まれた状態で該ドア（1）は閉塞されて浴槽（2）とドア（1）はシールされることを特徴とする差込式入浴装置である。前記支柱（4）が接触する底壁（6）の端面には該支柱（4）が嵌まる切欠部（7）が形成される。前記切欠部（7）と支柱（4）の接触部において、切欠部（7）及び／又は支柱（4）に、軟材（15）でなるシール機能体（14）が取着される。又、前記切欠部（7）に、液体又は気体を入れて膨張させる膨張体（22）でなるシール機能体（14）が取着され、浴槽（2）に、前記膨張体（22）に液体又は気体を供給する供給機（23）が設けられる。更に又、底壁（6）上面から延設され該切欠部（7）を覆う可撓部材（24）と、支柱（4）に水平状に設けられ前記可撓部材（24）を受ける受け体（25）とからなるシール機能体（14）が設けられ、前記可撓部材（24）には支柱（4）が嵌まる可撓部材切欠部（26）が形成され、可撓部材（24）において、ドア（1）の閉塞時にシール体（20）に接触する部分は、シール体（20）の押圧を受け止め該シール体（20）との間の水密を図る硬質部（12）である。

【0005】

【作用】本発明における浴槽2は入浴に供し、ドア1を開けた浴槽2に向けて車椅子5を差し込み、座部3を底壁6上に至らせ、支柱4は底壁6に接合させ、ドア1を閉め浴槽2の水密を図る。底壁6の正面端6ａに形成された切欠部7に車椅子5の支柱4を嵌め、切欠部7及び／又は支柱4に取着された軟材15でなるシール機能体14が切欠部7と支柱4との間をシールする。

【0006】シール機能体14を膨張体22としたものにおいては、浴槽2に設けた供給機23から前記膨張体22に液体又は気体を供給して膨張させ、切欠部7と支柱4との間をシールする。シール機能体14を底壁6から水平状に延設される可撓部材24と受け体25から構成したものにおいては、該可撓部材切欠部26に支柱4を嵌め、該支柱4に水平状に設けた受け体25で接触状に支持し、可撓部材切欠部26と受け体25の間の水密を図る。可撓部材24における硬質部12は、ドア1のシール体20に接触しドア1との水密を図る。

【0007】

【実施例】図1、2に示す本発明の第1実施例は、正面にドア1を設けた浴槽2と、座部3を支柱4で支持した車椅子5とからなる。前記浴槽2の底壁6の正面端6ａに接合させた支柱4を、正面端6ａとドア1との間に挟んでドアを閉塞すると、底壁6とドア1はシールされる。前記浴槽2の底壁正面端6ａに車椅子5の支柱4が嵌まる切欠部7を形成し、浴槽2の近傍に浴槽2の容量と略同等容量の貯湯槽8を設置し、該貯湯槽8と浴槽2を湯移動機構（図示省略）で連通する。図1に示す前記切欠部7は、左右側を互いに平行とし奥行き方向の先端を円形とした切欠穴であるが、他の形状では、正面端6

aから奥行き方向へ切欠きを深めるに従って狭くなる平面視テーパー状の切欠穴にする。切欠部7がテーパー状のものでは、開口端が広いので接合部9を嵌めやすい。

【0008】車椅子5の支柱4の立設中途部に前記切欠部7と略同形の接合部9を形成し、支柱4の下端にはキャスター10が取着された脚部11が設けられ、支柱4の途中部には前記座部3が取着され、支柱4の上部は支柱4を移動させる取っ手13となる。前記接合部9は、切欠部7に嵌めた後、ドア1を閉塞すると浴槽2の水密が図られるものである。尚、仮に、切欠部7が、浴槽2の奥行き方向へ長く切り欠かれた場合には、接合部9も該切欠部7に対応して長形になし、切欠部7を水密に塞ぐ形状にする。

【0009】シール機能体14は軟材15でなり、切欠部7の内周に取着され、切欠部7に接合部9が嵌められたうえ、接合部9が後端9aを、座部3に座した患者の前方向に押圧されると、シール機能体14は切欠部7と接合部7間に挟まれ、底壁6と接合部7間の水密が図られる。シール機能体14の他の実施例では、軟材15が、接合部9の外周に取着されるか、又は切欠部7の内周と接合部9の外周との両方に取着される。

【0010】ドア1は、浴槽2の正面側壁に設けられ、左側の遊端には該ドア1を浴槽2に掛止する掛止具16が設けられ、右側の基端には該ドア1を浴槽2に回動自在に支持する蝶番17が取着される。前記ドア1の内側壁には、浴槽2の左・右側壁18・19の各正面端18a・19b、底壁6の正面端6a、及び接合部9の後端9aとに接合するシール体20が取着される。尚、ドア1は、浴槽2の正面側壁でなく左側壁18又は右側壁19に設けてもよい。

【0011】第1実施例を使用するに際し、入浴時は、ドア1を開け、車椅子5の座部3に入浴者を載せたまま脚部11を底壁6の下に差し込み、入浴者を浴槽1に入れ、セッティングする。セッティング後、ドア1を手動で閉め、浴槽2に向けて押圧する。ドア1を閉めると、掛止具16が左側壁前端18の鉤受け具21に自動的に掛止される。シール体20は、接合部9の後端9aに当接したうえ切欠部7に向けて押圧し、更に、該シール体20は、浴槽1の左・右側壁18・19の各正面端18a・19bと、底壁6の正面端6aに当接する。

【0012】前記シール体20は、その押圧作用によって切欠部7における底壁6と接合部9の水密を図ると共に、ドア1と、浴槽2の左・右側壁18・19の各正面端18a・19bの水密を図り、ドア1と、底壁6の正面端6aの水密を図り、更に、接合部9の後端9aとの水密を図る。更に、軟材15とシール体20の接触個所においても、シール体20が軟材15に適宜な圧力で当接するので水密が図れる。ドア1の閉塞後、貯湯槽8の湯を浴槽2へ移動させ、入浴を行なう。脱浴時には、湯を貯湯槽8へ移動させ、浴槽2の湯を抜いた後、掛止具16を鉤受け部21から外しドア1を開け、車椅子5を浴槽2から引き出し、入浴を終わる。

【0013】第2実施例は、前述のシール機能体14を、液体又は気体を入れて膨張させる膨張体22とし、該膨張体22を切欠部7に取着して構成する。浴槽2には前記膨張体22に液体又は気体を供給する供給機23が設けられる。図2に示す第2実施例は、切欠部7に接合部9を嵌めドア1を閉めた後、供給機23を駆動させて膨張体22を膨張させ、該膨張体22によって、底壁6と接合部9の水密、及び、ドア1と接合部9の水密を図る。尚、前記供給機23をドア1の開閉に連動させて作動させるものとした場合、該供給機23は、入浴時には、切欠部7に接合部7を嵌めドア1を閉めると作動して膨張体22を膨らませ、脱浴時には、供給機23はドア1を開けると作動して膨張体22を収縮させる。

【0014】図3、4に示す第3実施例では、前述のシール機能体14を、底壁6の切欠部7にわたって延設される可撓部材24と、支柱4に設けられる受け体25とから構成される。前記可撓部材24には支柱4が嵌まる可撓部材切欠部26が形成され、更に、可撓部材24においてドア1のシール体20に接触する部分は、シール体20との間に水密を図って接触し硬質な部材でなる硬質部12である。そして、該可撓部材24の下面は奥行き方向に低い傾斜状になっており、受け体25の上面は可撓部材切欠部26へ嵌まる時の進行方向先端が低い傾斜状になっている。第3実施例においては、可撓部材切欠部26に向かって支柱4を押し込み、可撓部材24の下面と受け体25の上面とを広面積に押圧状態に密着させ、受け体25で可撓部材24を支持した状態で嵌め、両部材24・25の水密を図る。又、ドア1の閉塞時、前記硬質部12はドア1のシール体20に押圧されて接し水密を図る。

【0015】図5に示す第4実施例では、前述のシール機能体14を、底壁6の切欠部7にわたって延設される可撓部材24と、支柱4に設けられる接合部9とから構成される。前記可撓部材24には可撓部材切欠部26が形成される。第4実施例は、可撓部材切欠部26に支柱4を嵌めた後ドア1を閉めると、可撓部材24の端面は、接合部9に押圧接触し且つシール体20にも押圧接触し、これらの押圧接触により浴槽2はシールされる。

【0016】

【発明の効果】請求項1に記載した本発明は、浴槽2のドア1を開けておいて該浴槽2に車椅子5を差し込み、浴槽2の底壁正面端6aに支柱4を接合させておいてドア1を閉めるものであるから、車椅子5を浴槽2の幅より狭くし大形化しないものとすることができ、該車椅子の扱いが容易となった。

【0017】請求項2に記載した本発明は、浴槽2の底壁6の正面端6aにおいて、支柱4が接合する部位に切欠部7を設け、該切欠部7に支柱4を嵌める構成とした

5

ので、支柱４が切欠部７に確実に固定され入浴中座部３が動かず、安定して入浴できる。又、ドア１の内側壁に支柱４を受ける凹部を形成しなくてよいので、形状を単純化でき、構成を簡素化・軽量化でき、開閉も軽微な力で容易に行なえ、好都合である。

【００１８】請求項３に記載した本発明は、軟材１５でなるシール機能体１４を切欠部７及び／又は支柱４に取着したので、底壁６と支柱４とのシールは、支柱４の接合部９を底壁６の切欠部７へ嵌めた後ドア１を閉めるだけの簡単な作業で行なえ、好都合である。

【００１９】請求項４に記載した本発明は、シール機能体１４を膨張体２２としたので、切欠部７と接合部９の間に少々の位置ずれが有っても、接合部９は、膨張する膨張体２２によって所定位置へ移動させられ確実にシールできるので、支柱４を切欠部７へ嵌める作業に高精度は要求されず、該作業に要する心労は軽度となり、好都合である。

【００２０】請求項５に記載した本発明は、シール機能体１４を可撓部材２４と受け体２５で構成したので、切欠部７とこれに嵌める接合部９との間に少々の非接触部位が有っても、水密作用は可撓部材２４と受け体２５の間で、水平状の略平面接触で行なわれ、更に、浴槽２内の湯の水圧も加わるから、底壁６と支柱４とを確実にシールでき、好都合である。

【図面の簡単な説明】

【図１】本発明の第１実施例の斜視外観図である。

6

【図２】本発明の第２実施例におけるシール機構の部分斜視図である。

【図３】本発明の第３実施例におけるシール機構の部分斜視図である。

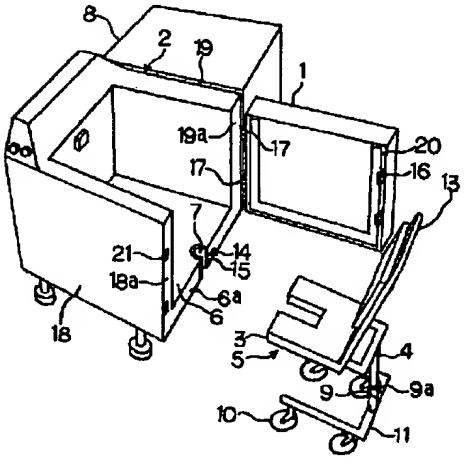
【図４】本発明の第３実施例におけるシール機構の部分断面図である。

【図５】本発明の第４実施例におけるシール機構の部分断面図である。

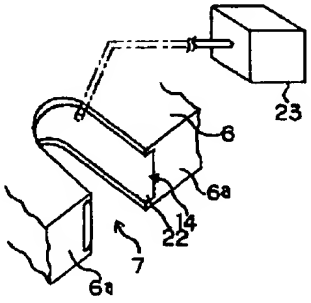
【符号の説明】

１　ドア
２　浴槽
３　座部
４　支柱
５　車椅子
６　底壁
７　切欠部
１２　硬質部
１４　シール機能体
１５　軟材
２０　シール体
２２　膨張体
２３　供給機
２４　可撓部材
２５　受け体
２６　可撓部材切欠部

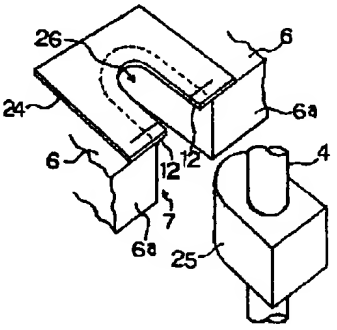
【図1】



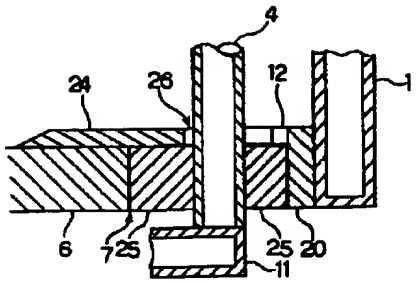
【図2】



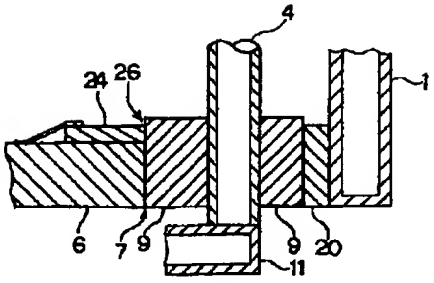
【図3】



【図4】



【図5】



【手続補正書】
【提出日】平成６年８月２２日
【手続補正１】
【補正対象書類名】明細書
【補正対象項目名】請求項１
【補正方法】変更
【補正内容】
【請求項１】一側壁にドア（１）を設けた浴槽（２）と、座部（３）を支柱（４）で支持した車椅子（５）とからなり、該車椅子（５）が浴槽（２）内にある時、前記支柱（４）が浴槽（２）の底壁（６）とドア（１）に挟持されて構成し、該ドア（１）が閉塞された時、浴槽（２）とドア（１）はシールされることを特徴とする差込式入浴装置。
【手続補正２】
【補正対象書類名】明細書
【補正対象項目名】０００４
【補正方法】変更
【補正内容】
【０００４】
【課題を解決するための手段】即ち本発明は、一側壁にドア（１）を設けた浴槽（２）と、座部（３）を支柱（４）で支持した車椅子（５）とからなり、該車椅子（５）が浴槽（２）内にある時、前記支柱（４）が浴槽（２）の底壁（６）とドア（１）に挟持されて構成し、該ドア（１）が閉塞された時、浴槽（２）とドア（１）はシールされることを特徴とする差込式入浴装置である。前記支柱（４）が接触する底壁（６）の端面には該支柱（４）が嵌まる切欠部（７）が形成される。前記切欠部（７）と支柱（４）の接触部において、切欠部（７）及び／又は支柱（４）に、軟材（１５）でなるシール機能体（１４）が取着される。又、前記切欠部（７）に、液体又は気体を入れて膨張させる膨張体（２２）でなるシール機能体（１４）が取着され、浴槽（２）に、前記膨張体（２２）に液体又は気体を供給する供給機（２３）が設けられる。更に、底壁（６）上面から延設され該切欠部（７）を覆う可撓部材（２４）と、支柱（４）に水平状に設けられ前記可撓部材（２４）を受ける受け体（２５）とからなるシール機能体（１４）が設けられ、前記可撓部材（２４）には支柱（４）が嵌まる可撓部材切欠部（２６）が形成され、可撓部材（２４）において、ドア（１）の閉塞時にシール体（２０）に接触する部分は、シール体（２０）の押圧を受け止め該シール体（２０）との間の水密を図る硬質部（１２）である。
【手続補正３】
【補正対象書類名】明細書
【補正対象項目名】０００９
【補正方法】変更
【補正内容】
【０００９】シール機能体１４は軟材１５でなり、切欠部７の内周に取着され、切欠部７に接合部９が嵌合されたうえ、接合部９が後端９ａを、座部３に座した患者の前方向に押圧されると、シール機能体１４は切欠部７と接合部９間に挟持され、底壁６と接合部９間の水密が図られる。シール機能体１４の他の実施例では、軟材１５が、接合部９の外周に取着されるか、又は切欠部７の内周と接合部９の外周との両方に取着される。
【手続補正４】
【補正対象書類名】明細書
【補正対象項目名】００１３
【補正方法】変更
【補正内容】
【００１３】第２実施例は、前述のシール機能体１４を、液体又は気体を入れて膨張させる膨張体２２とし、該膨張体２２を切欠部７に取着して構成する。浴槽２には前記膨張体２２に液体又は気体を供給する供給機２３が設けられる。図２に示す第２実施例は、切欠部７に接合部９を嵌合しドア１を閉めた後、供給機２３を駆動させて膨張体２２を膨張させ、該膨張体２２によって、底壁６と接合部９の水密及びドア１と接合部９の水密を図

る。尚、前記供給機２３をドア１の開閉に連動させて作動させるものとした場合、該供給機２３は、入浴時には、切欠部７に接合部９を嵌合しドア１を閉めると作動して膨張体２２を膨らませ、脱浴時には、供給機２３はドア１を開けると作動して膨張体２２を収縮させる。

【手続補正５】
【補正対象書類名】明細書
【補正対象項目名】００１４
【補正方法】変更
【補正内容】
【００１４】図３、４に示す第３実施例では、前述のシール機能体１４を、底壁６の切欠部７にわたって延設される可撓部材２４と、支柱４に設けられる受け体２５とから構成される。前記可撓部材２４には支柱４が嵌合する可撓部材切欠部２６が形成され、更に、可撓部材２４においてドア１のシール体２０に接触する部分は、シール体２０との間に水密を図って接触し硬質な部材でなる硬質部１２である。そして、該可撓部材２４の下面は奥行き方向に下降する傾斜状になっており、受け体２５の上面は可撓部材切欠部２６へ嵌合する時の進行方向先端が下降する傾斜状になっている。第３実施例においては、可撓部材切欠部２６に向かって支柱４を押し込み、可撓部材２４の下面と受け体２５の上面とを広面積に押圧状態に密着させ、受け体２５で可撓部材２４を支持した状態で嵌合させ、両部材２４・２５の水密を図る。又、ドア１の閉塞時、前記硬質部１２はドア１のシール体２０に押圧されて接し水密を図る。

【手続補正６】
【補正対象書類名】明細書
【補正対象項目名】００１５
【補正方法】変更
【補正内容】
【００１５】図５に示す第４実施例では、前述のシール機能体１４を、底壁６の切欠部７にわたって延設される可撓部材２４と、支柱４に設けられる接合部９とから構成される。前記可撓部材２４には可撓部材切欠部２６が形成される。第４実施例は、可撓部材切欠部２６に支柱４を嵌合した後ドア１を閉めると、可撓部材２４の端面は、接合部９に押圧接触し且つシール体２０にも押圧接触し、これらの押圧接触により浴槽２はシールされる。図示を省略するが、他の実施例として、切欠部７を底壁６に設けないで、ドア１の内側壁に支柱４を受ける凹部を形成してもよい。

【手続補正７】
【補正対象書類名】明細書
【補正対象項目名】００１７
【補正方法】変更
【補正内容】
【００１７】請求項２に記載した本発明は、浴槽２の底壁６の正面端６ａにおいて、支柱４が接合する部位に切欠部７を設け、該切欠部７に支柱４を嵌合する構成としたので、支柱４が切欠部７に確実に固定され入浴中座部３が動かず、安定して入浴できる。底壁６に切欠部７を設けた場合は、ドア１の形状を単純化でき、構成を簡素化・軽量化でき、開閉も軽微な力で容易に行なえ、好都合である。

US005865516A

United States Patent [19]

Woy

[11] Patent Number: 5,865,516

[45] Date of Patent: Feb. 2, 1999

[54] **MODEL DISPLAY CASE**

[76] Inventor: **Rodger O. Woy**, 13110 Scott Rd., Waynesboro, Pa. 17268

[21] Appl. No.: **987,022**

[22] Filed: **Dec. 9, 1997**

[51] **Int. Cl.**[6] **A47F 3/10**

[52] **U.S. Cl.** **312/125**; 312/114; 40/431; 362/125

[58] **Field of Search** 312/114, 117, 312/125, 128, 135, 284, 9.45, 9.46, 223.5; 40/431; 362/125

[56] **References Cited**

U.S. PATENT DOCUMENTS

845,652	2/1907	Berge	312/114 X
1,261,812	4/1918	Higgins	312/114 X
1,421,008	6/1922	Inman .	
1,525,330	2/1925	Smith	312/135
1,912,899	6/1933	Johannsen	312/114
2,000,537	5/1935	Ransom	312/125 X
2,023,260	12/1935	Beers et al.	312/114
2,075,918	4/1937	Waalkes	108/20 X
3,738,035	6/1973	Bricker	40/431
3,861,766	1/1975	Corsini et al.	312/125
4,821,158	4/1989	Mitten .	
5,125,726	6/1992	Hahn et al.	312/114

FOREIGN PATENT DOCUMENTS

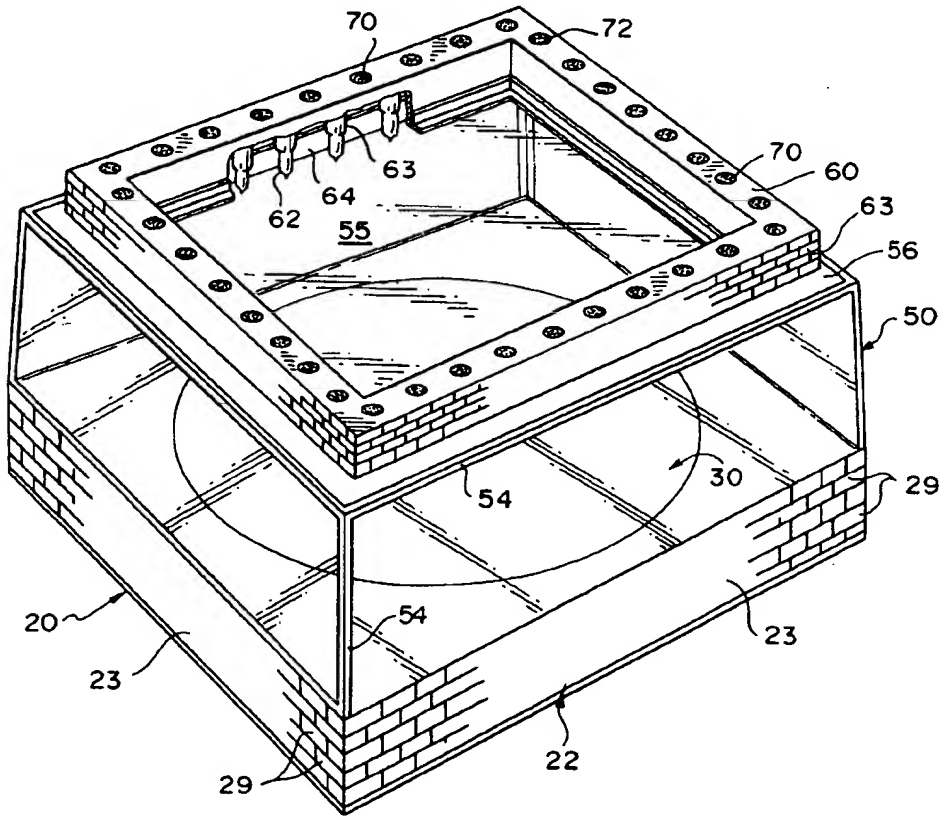
2385366	12/1978	France	312/125
1154242	6/1969	United Kingdom	362/125

Primary Examiner—Peter M. Cuomo
Assistant Examiner—James O. Hansen
Attorney, Agent, or Firm—Dowell & Dowell, P.C.

[57] **ABSTRACT**

A model display case, which may be decorated to be simulative of a building, includes a base having a raised support surface providing a "floor" in which an electrically powered rotating turntable is centrally positioned. A clear cover is mounted over the base and includes a raised extension in which a plurality of lights are mounted to provide illumination of the case. The lights are screened from view from the outside of the case by reflectors extending from the extension and screen-covered vents are preferably provided to allow for dissipation of heat produced by the lights from the interior of the case to the outside environment.

12 Claims, 6 Drawing Sheets



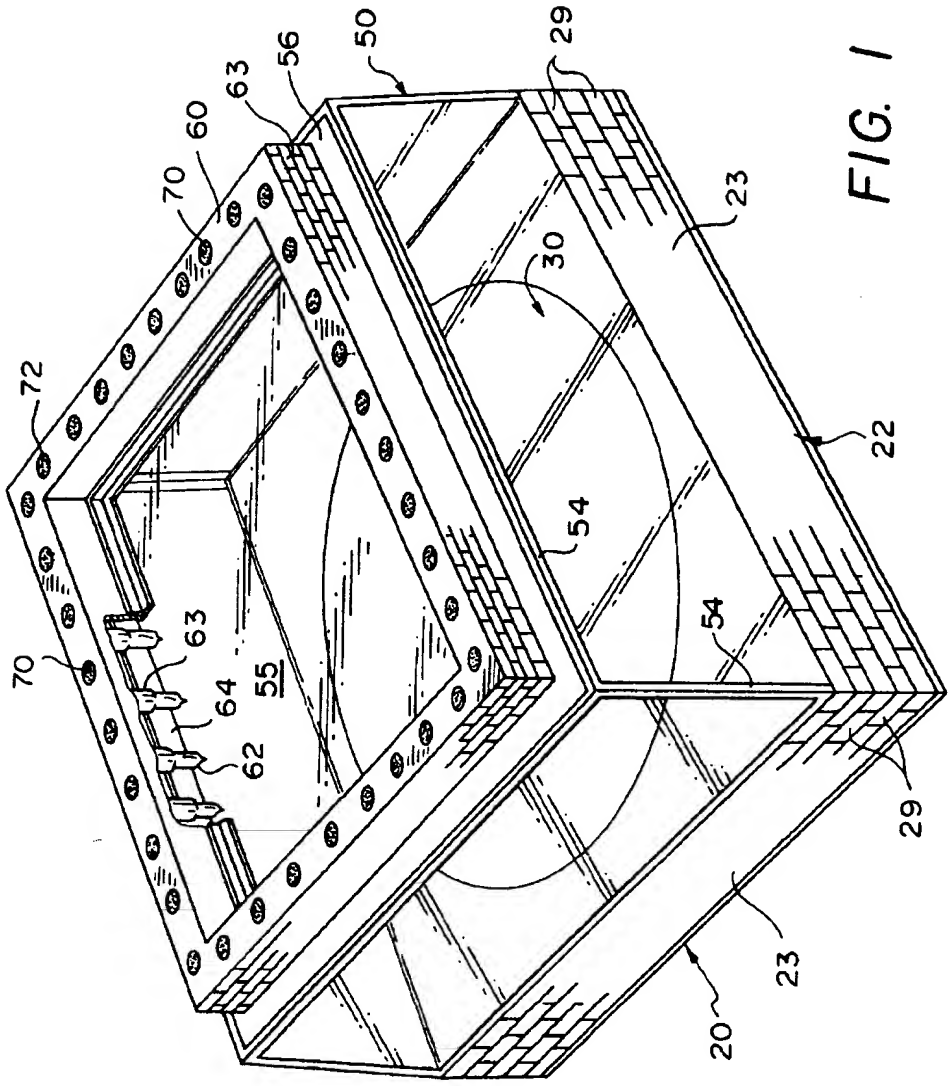


FIG. 1

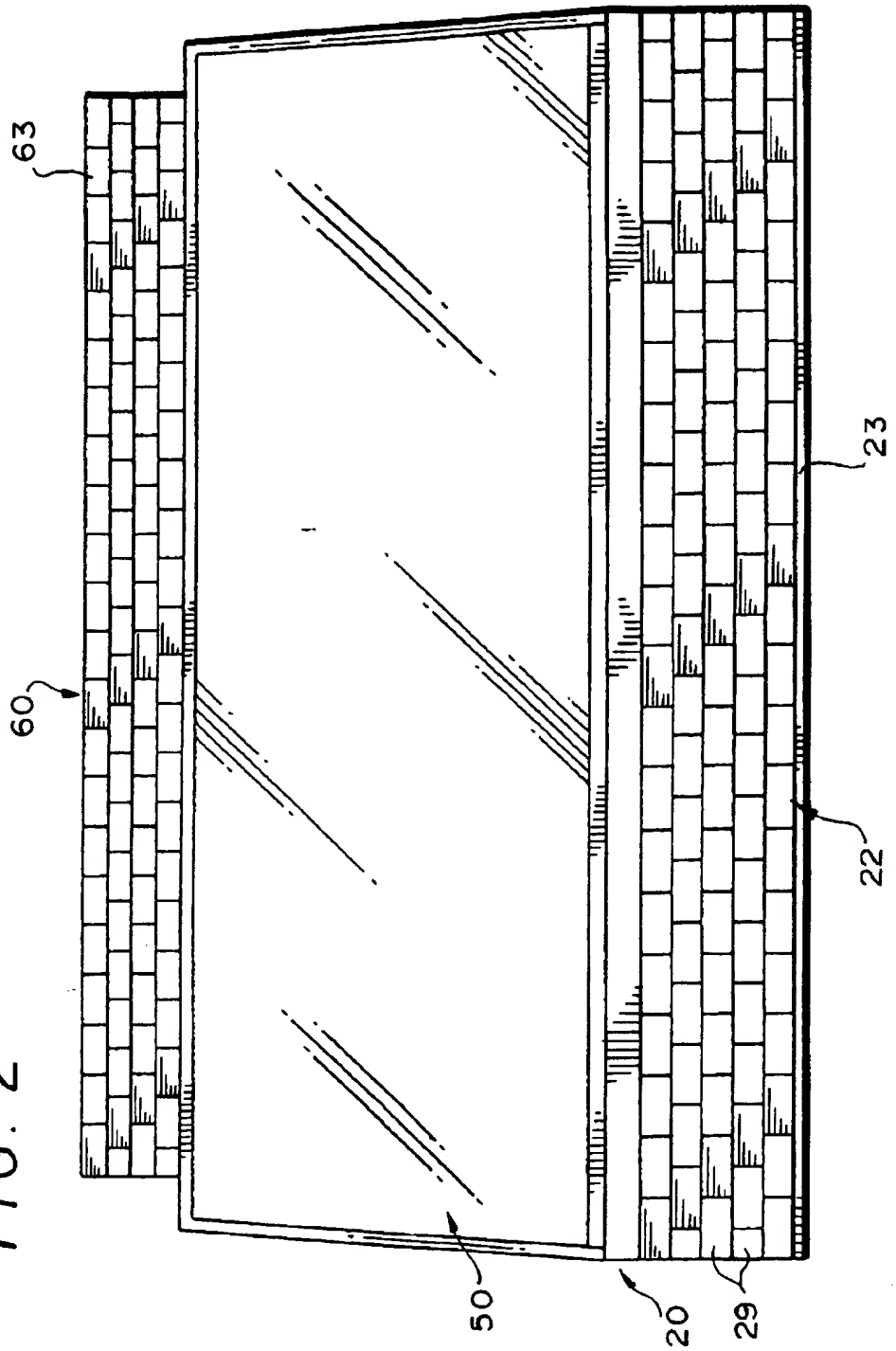


FIG. 2

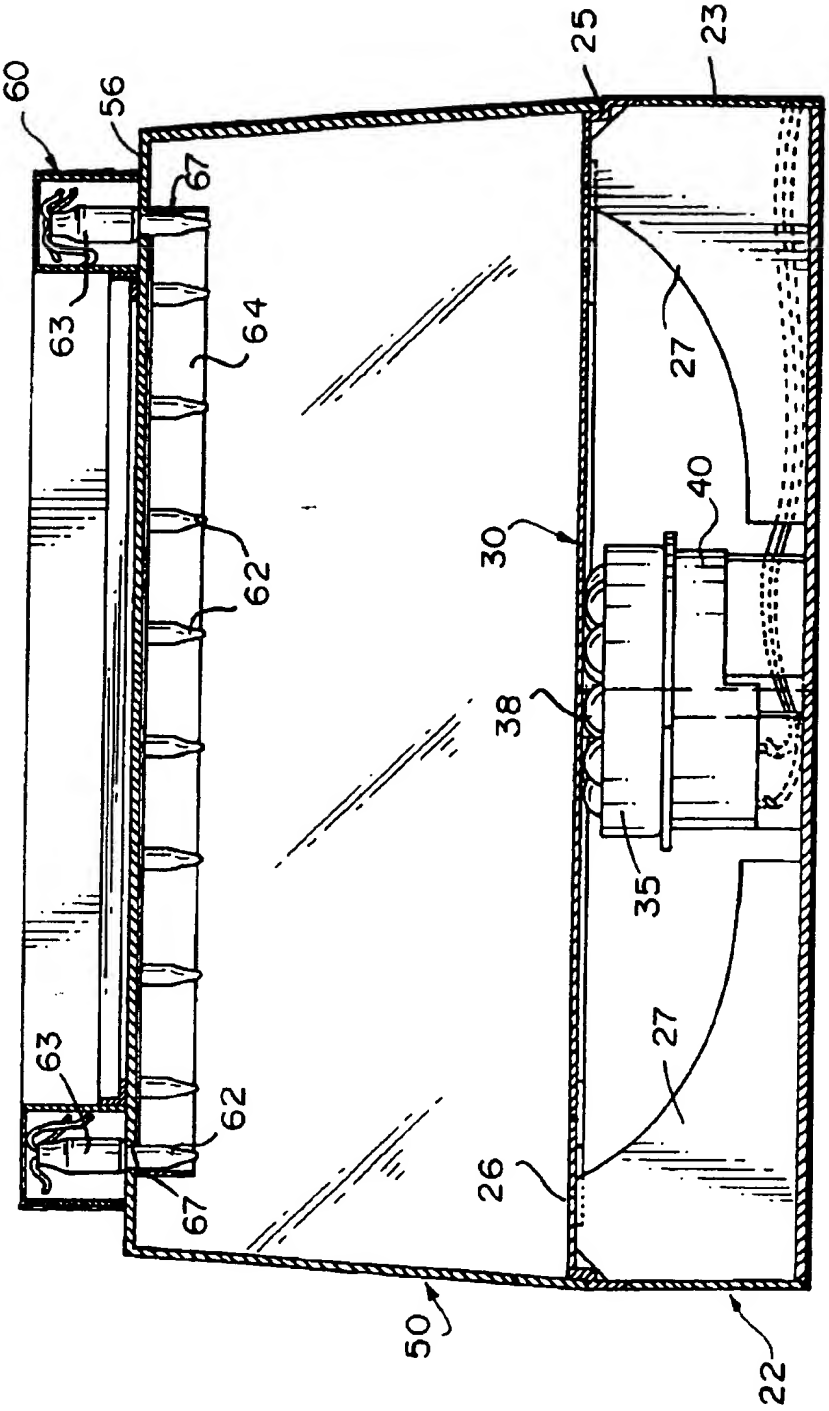


FIG. 3

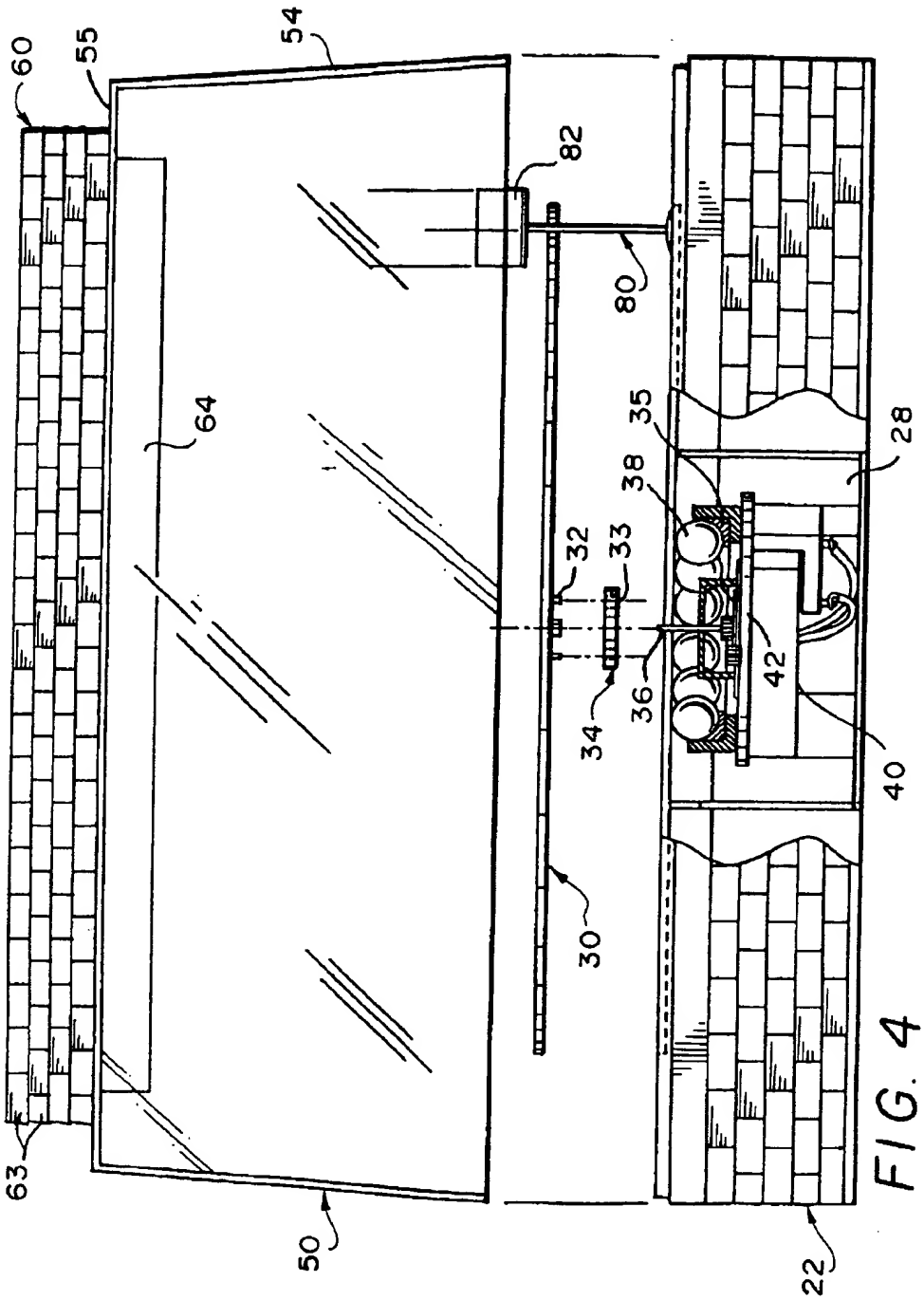


FIG. 4

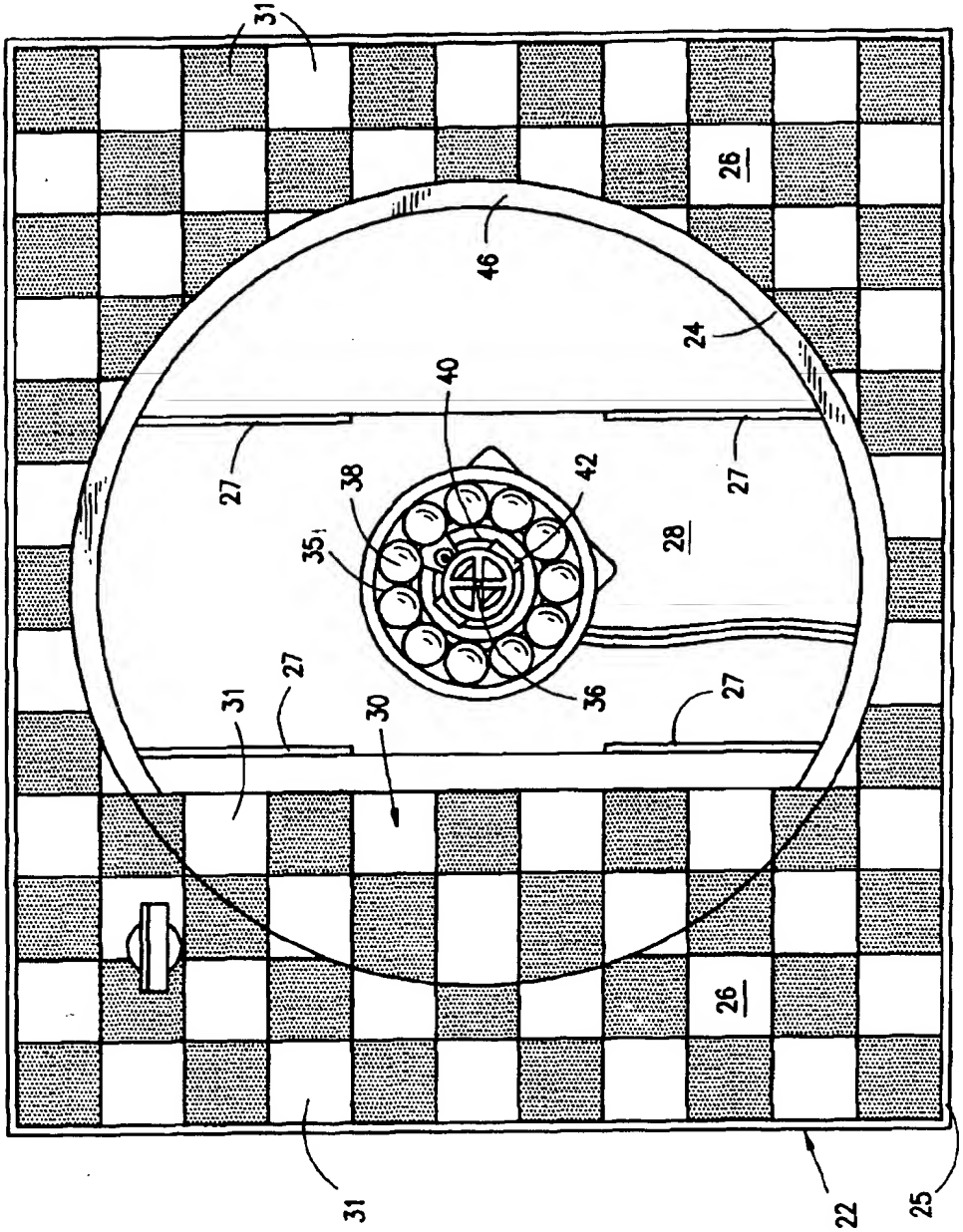


FIG. 5

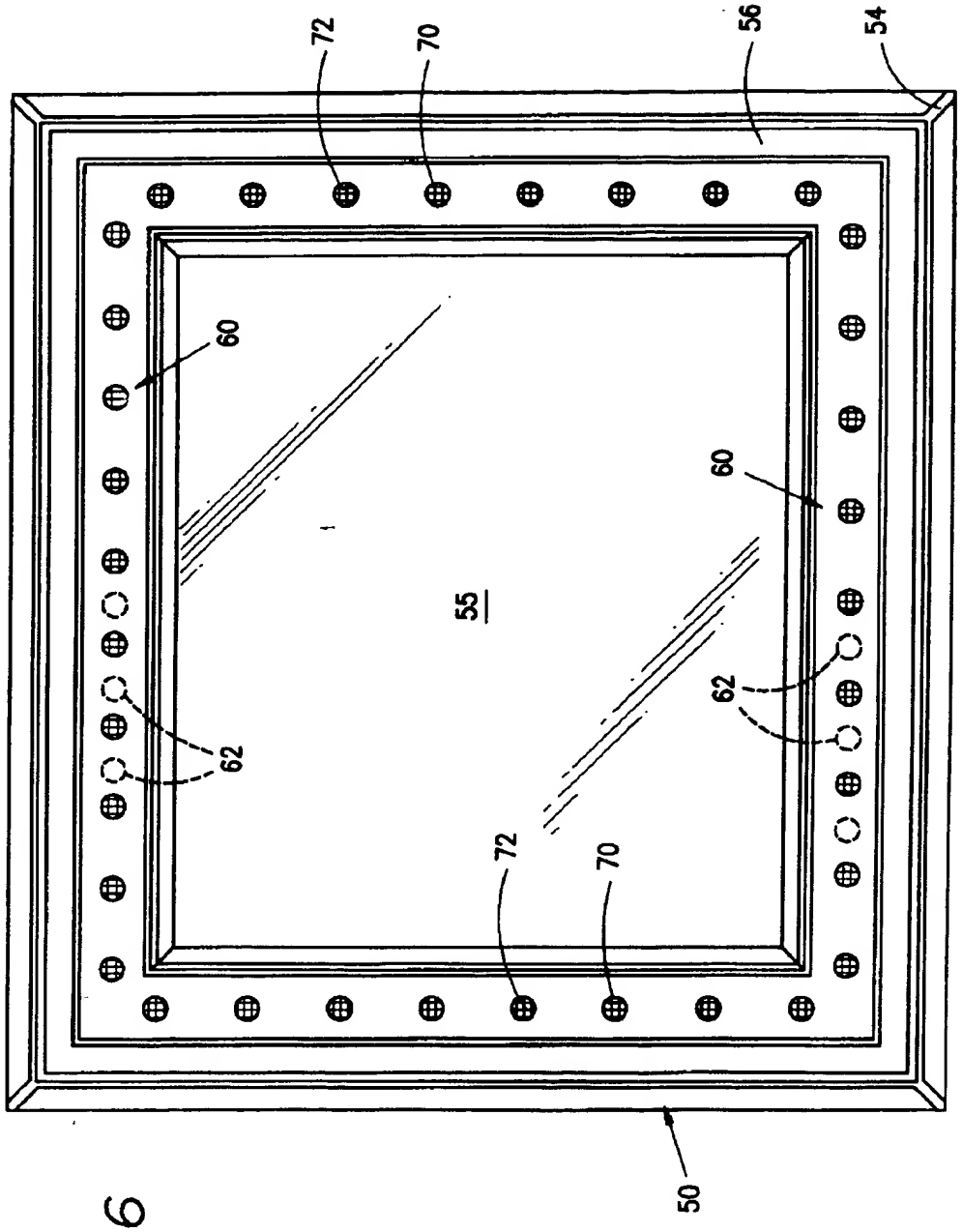


FIG. 6

MODEL DISPLAY CASE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention is generally directed toward display cases, and more particularly, to an illuminated model display case which is decorated to be simulative of a building and which includes a rotating platform for rotating a displayed item.

2. History of the Related Art

The building of scale model automobiles and other items such as scale model airplanes and trains has become a very popular hobby for many individuals. Display cases are known for containing such models. An example of one known type of display case, which is marketed by AMT/Ertl Inc., is a plastic model car display case constructed of a rectangular plastic base with includes a box-like clear plastic lid. This known display does not provide any means for illuminating the displayed object other than by ambient light, nor is there provided any means to enable an observer to view all sides of the displayed object without having to walk around the case, which may be impractical when the case is displayed in a crowded room or near a wall.

In view of the limitations associated with the known devices for displaying items, particularly models, there has been a need for a new display case which includes means for illuminating the displayed item and which avoids the necessity of walking around the entire case to view all sides of the displayed item.

SUMMARY OF THE INVENTION

The present invention has been made in view of the above described and other limitations of known cases for displaying items such as scale models.

It is an object of the present invention to provide a model display case which is decorated to be outwardly simulative of a building such as a vintage automobile dealership.

It is yet another object of the present invention to provide a model display case which features an integral means for illuminating the item being displayed.

It is yet another object of the present invention to provide a model display case featuring a means for rotation of the item being displayed to enable viewing of the item from all sides without an observer having to move around the case.

Additional objects and advantages of the present invention will become apparent from the detailed description which follows, particularly when considered in conjunction with the accompanying drawing figures.

To achieve the objects of the present invention as described herein, the model display case, in accordance with preferred embodiments of the invention, comprises a model display case, which may be decorated to be simulative of a building, and which includes a rectangular base with a box-like substantially transparent, and preferably clear, plastic top. The base includes a raised support surface providing a "floor" in which an electrically powered rotating turntable is centrally positioned. The base is preferably patterned on the exterior to resemble the concrete block foundation wall of a building. The box-like top may be trimmed with chrome tape to simulate the stainless steel window frames of a building. Illumination is provided by a plurality of lights preferably mounted into the periphery of the top and camouflaged with a simulated shingled mansard roof. In the simulated ceiling of the case, the lights are screened from view from the outside by overhead partitions that also serve as reflectors to increase interior light. Screen-covered vents

are preferably provided to allow for dissipation of heat produced by the lights from the interior of the case to the outside environment. The simulated floor of the case may be patterned to simulate a showroom floor such as by painting in a black-and-white checkerboard pattern. Various insignia can be added to the case to simulate a vintage automobile showroom, making the case particularly suitable for displaying model cars. Similarly, the case could be decorated as a simulated flight deck for displaying model airplanes or as a simulated roundhouse for displaying model trains.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. **1** is a perspective view from above of the model display case partially cut away to show the position of lights all in accordance with the present invention;

FIG. **2** is a front plan view of the model display case of FIG. **1**;

FIG. **3** is a front cross-sectional view of the model display case of FIG. **1**;

FIG. **4** is a front partially exploded, partial cross-sectional view of the model display case of FIG. **1**;

FIG. **5** is a top view of a portion of the turntable and base of the model display case partially showing a checkerboard patterned floor, all in accordance with the present invention; and

FIG. **6** is a top plan view of the model display case of FIG. **1**.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to FIG. **1**, a preferred embodiment of a model display case in accordance with the present invention is shown by reference numeral **20** and includes a rectangular base **22**, a rotating turntable **30** centrally located within the base **22**, and a clear transparent cover **50**, each of which is described in more detail below.

The base includes side walls **23** which extend upwardly from a bottom wall to an inwardly extending ledge or shoulder **25**. The base also has an upper wall **26** having a circular opening **24** therein FIG. **5**, in which the turntable **30** is cooperatively aligned. The upper wall **26** and the turntable **30** combine to simulate a showroom "floor" onto which scale models or other objects may be placed for display.

The upper wall **26** is supported by a plurality of support gussets **27**, as shown in FIG. **3**, which are mounted within a chamber **28** defined within the base **22**.

The exterior of the base **22** is preferably decorated or patterned to resemble a brick or block wall including simulated blocks **29**.

Now referring particularly to FIGS. **3** and **4**, the turntable **30** is positioned centrally within the base **22** to support and rotate scale models (not shown) or other objects placed thereon for display. The top of the turntable **30** is co-extensive with the upper surface **26** of the base and substantially fills the circular opening **24** therein. The surface **26** and turntable **30** combine to create a simulated floor of the case **20** which may be decorated, as in FIG. **5**, with a black-and-white checkerboard pattern **31**. In a particularly preferred embodiment, an approximately nine and one-half inch diameter turntable is utilized to enable the display of popular 1/24 and 1/25 scale models.

The turntable **30** may be caused to rotate using a suitable drive system. A preferred drive system includes a plurality

of studs 32 which extend from the bottom of the turntable 30 and which fit within slots 33 in a drive wheel 34, which itself fits over a drive shaft 36. Preferably a plurality of ball bearings 38 support the turntable from below while allowing the turntable freedom to rotate smoothly. The ball bearings are supported in a circular track or race 35.

A motor such as a clock motor 40 (FIG. 4) drives the drive shaft 36. The gearing ratio is selected to be suitable to obtain a desired rate of rotation for the turntable 30. A drive shaft stabilizer tower 42 is preferably included to provide support and stabilization to the drive shaft 36. The motor is powered by batteries (not shown) mounted within a battery housing 48 or alternatively by conventional alternating power current. The turntable is stabilized by an annular low friction lip 46 which provides support from below to the turntable's circumference, see FIG. 5.

The cover 50 is preferably box-shaped to make it easier to cover models contained within the case. In one alternative, the could be flat and the base could include upright walls which the cover could rest on. A substantial portion of the cover 50 should be transparent to enable viewing from outside of the case. Chrome tape may be added to the exterior of the top 50 to simulate stainless steel window frames 54. The lower edge 51 of the cover seats on the ledge 25 of the base.

A generally continuous rectangular hollow-and inverted U-shaped extension 60 is provided on the clear top 55 of the cover 50 and adjacent the side edges 56 thereof to contain a light source means for illuminating the interior of the display case. The illuminating means preferably includes a plurality of low wattage lights 62 which are mounted to lamp bases 63 housed within the extension 60, preferably along the entire inner periphery or length thereof. In the preferred embodiment, the lights are each three and one-half volts and extend through spaced openings 67 in the top 55 of the cover as shown in FIG. 3. Power for the lights may be supplied by batteries (not shown) or through a power cord connected to a suitable source of either AC or DC power. A generally continuous vertical light reflector 64 extends below the extension 60 and acts to obscure the lights from view from outside of the case. The reflector deflects light onto the simulated "floor" and onto the object being displayed. As shown, the exterior of the extension may be decorated to simulate a shingled mansard roof 63.

As best seen in FIGS. 1 and 6, a plurality of heat vents 70 are provided in spaced relationship through an upper surface 66 of the extension 60 to ventilate heat produced by the lights 62 from within the interior of the display case to outside thereof. The vents 70 are preferably spaced intermediate each light 62 so as to be substantially adjacent thereto. The use of the vents 70 prevents the temperature of the interior of the case from exceeding approximately 80° F. Each vent opening is also preferably covered by a screen 72 to prevent dust and dirt from entering the display case.

When a model is displayed in the case 20 on the rotating turntable 30 with the lights 62 turned on, the light appears to dance on reflective surfaces of the turning model producing a very alluring effect to a viewer.

In order to provide pertinent information or statistics with respect to a model being displayed within the case, in the preferred embodiment, the case also includes a display stand 80 which may in the form of an easel in order to support a display card 82. The display stand is mounted on the upper wall 26 or "floor" of the base.

Although the display case has been described for use for displaying model cars and the like, the case can be altered to display other models, such as model trains or aircraft. In such cases, the base and cover would be simulated to form either a round house for trains or possibly a flight deck for airplanes.

The foregoing description of the preferred embodiments of the invention has been presented to illustrate the principles of the invention and not to limit the invention to a particular embodiment as illustrated. Although the invention is described with respect to preferred embodiments, modifications thereto will be apparent to those skilled in the art. It is intended that the scope of the invention be defined by all of the embodiments encompassed within the following claims and any and all equivalents thereof.

What is claimed is:

1. A model display case having an interior for displaying models comprising:

a base having an upper surface with an opening therein;

a turntable having a top surface for supporting the models being displayed, said turntable mounted within said opening in said base;

a drive means mounted in said base for rotating said turntable;

a transparent cover mounted above said base and providing a view from outside of the case of the interior of the display case and a view of displayed models therein, said cover including a generally continuous extension extending from an upper surface thereof and which defines an inverted generally U-shaped channel; and

a plurality of light means mounted in spaced relationship with respect to one another within said extension for illuminating the interior of the display case and for illuminating models being displayed.

2. The model display case of claim 1 including a plurality of vent openings provided in spaced relationship through said extension, said vent openings providing for ventilation of heat from said plurality of light means mounted within said extension.

3. The model display case of claim 2 including screen means mounted at each of said vent openings in said extension for preventing particles from entering through said vent openings into the display case.

4. The model display case of claim 3 including a vent opening spaced intermediate each of said plurality of light means.

5. The model display case of claim 4 including a reflector extending from said extension inwardly of said cover for reflecting light into the display case.

6. The model display case of claim 5 in which each of said light means is of a size to be recessed relative to said extension so as to be obscured from direct view from outside the display case by said reflector.

7. The model display case of claim 6 wherein said turntable includes a top surface, said top surface being co-extensive with said upper surface of said base, and each of said upper surface of said base and said top surface of said turntable having a similar design pattern applied thereto.

8. The model display case of claim 7 in which said pattern is a checkerboard pattern.

9. The model display case of claim 7 in which said drive means for rotating said turntable includes a motor having a drive shaft, means for connecting said drive shaft to said

turntable, and bearing means spaced outwardly from said drive shaft for supporting a lower surface of said turntable.

10. The model display case of claim 9 including an annular support lip mounted within said base, said annular lip being formed of a low friction material extending upwardly so as to be engageable with said turntable to provide stabilization for said turntable.

11. The model display case of claim 1 including a display stand mounted within the display case to said upper surface of said base.

12. The model display case of claim 1 in which said base has an exterior surface simulated to form a plurality of block elements and said extension has an outer surface simulated to form a tiled roof.

* * * * *

US005865516A

United States Patent [19]

Woy

[11] Patent Number: 5,865,516

[45] Date of Patent: Feb. 2, 1999

[54] **MODEL DISPLAY CASE**

[76] Inventor: **Rodger O. Woy**, 13110 Scott Rd., Waynesboro, Pa. 17268

[21] Appl. No.: **987,022**

[22] Filed: **Dec. 9, 1997**

[51] **Int. Cl.**[6] **A47F 3/10**

[52] **U.S. Cl.** **312/125**; 312/114; 40/431; 362/125

[58] **Field of Search** 312/114, 117, 312/125, 128, 135, 284, 9.45, 9.46, 223.5; 40/431; 362/125

[56] **References Cited**

U.S. PATENT DOCUMENTS

845,652	2/1907	Berge	312/114 X
1,261,812	4/1918	Higgins	312/114 X
1,421,008	6/1922	Inman .	
1,525,330	2/1925	Smith	312/135
1,912,899	6/1933	Johannsen	312/114
2,000,537	5/1935	Ransom	312/125 X
2,023,260	12/1935	Beers et al.	312/114
2,075,918	4/1937	Waalkes	108/20 X
3,738,035	6/1973	Bricker	40/431
3,861,766	1/1975	Corsini et al.	312/125
4,821,158	4/1989	Mitten .	
5,125,726	6/1992	Hahn et al.	312/114

FOREIGN PATENT DOCUMENTS

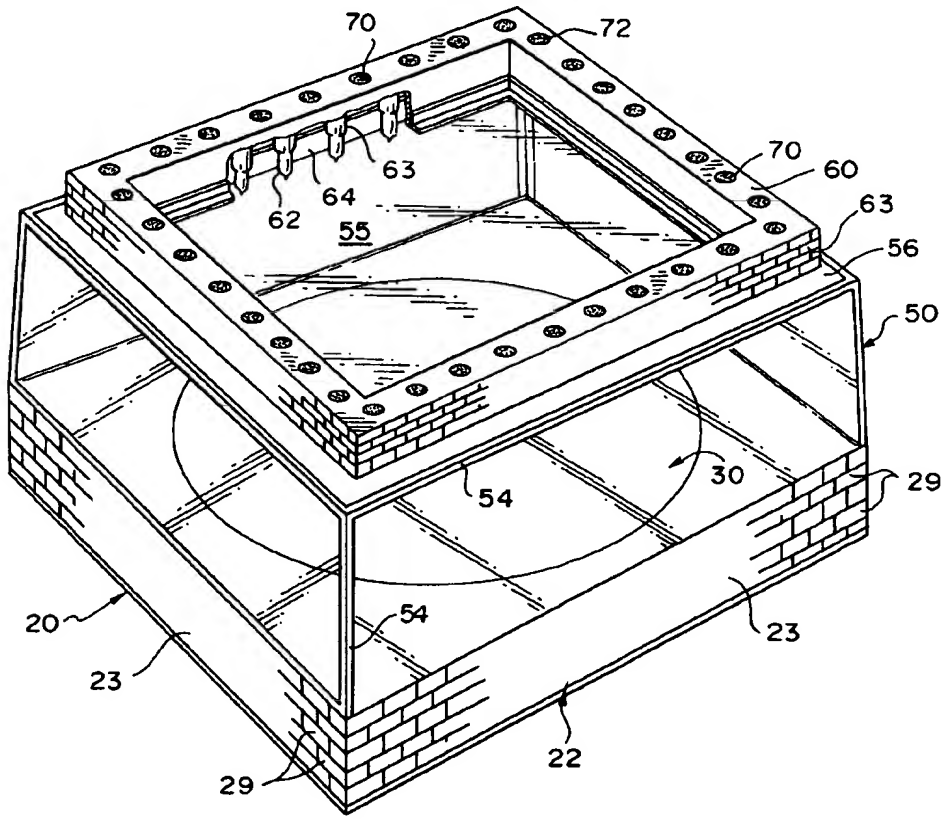
2385366	12/1978	France	312/125
1154242	6/1969	United Kingdom	362/125

Primary Examiner—Peter M. Cuomo
Assistant Examiner—James O. Hansen
Attorney, Agent, or Firm—Dowell & Dowell, P.C.

[57] **ABSTRACT**

A model display case, which may be decorated to be simulative of a building, includes a base having a raised support surface providing a "floor" in which an electrically powered rotating turntable is centrally positioned. A clear cover is mounted over the base and includes a raised extension in which a plurality of lights are mounted to provide illumination of the case. The lights are screened from view from the outside of the case by reflectors extending from the extension and screen-covered vents are preferably provided to allow for dissipation of heat produced by the lights from the interior of the case to the outside environment.

12 Claims, 6 Drawing Sheets



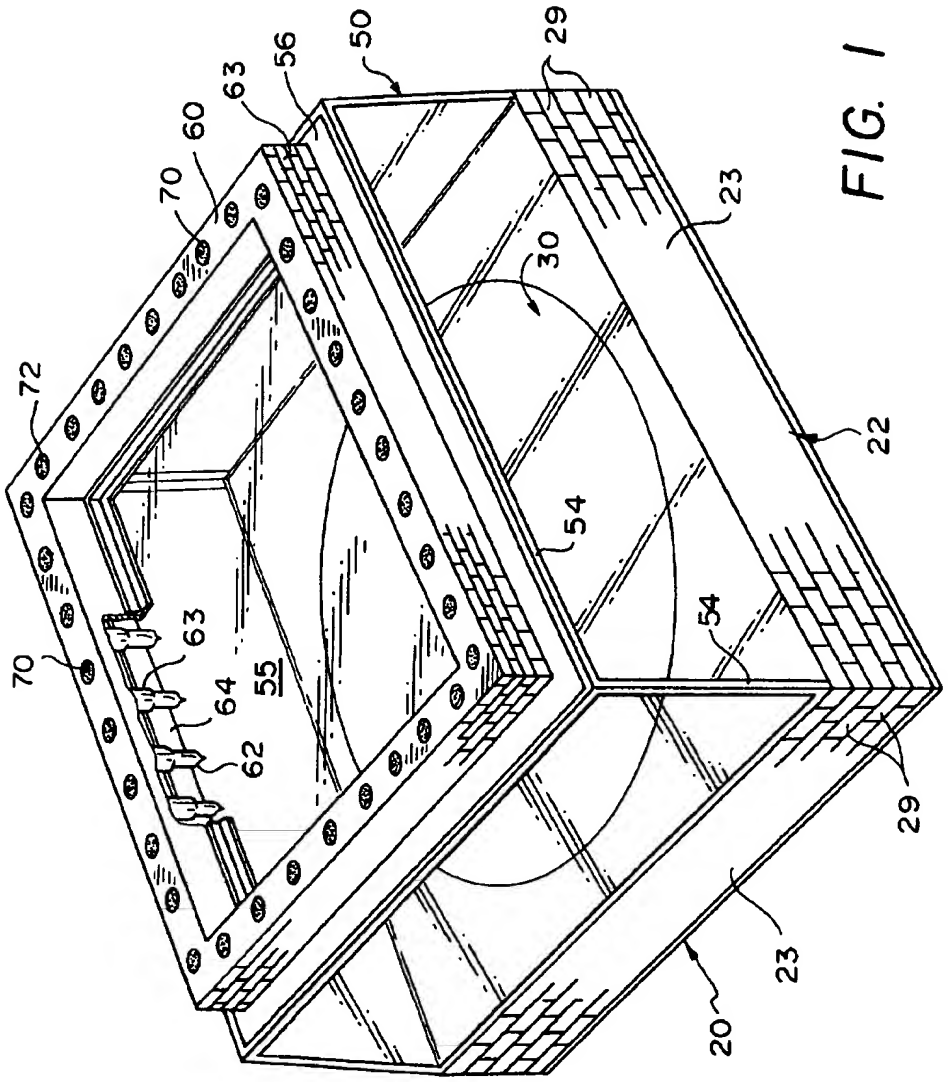


FIG. 1

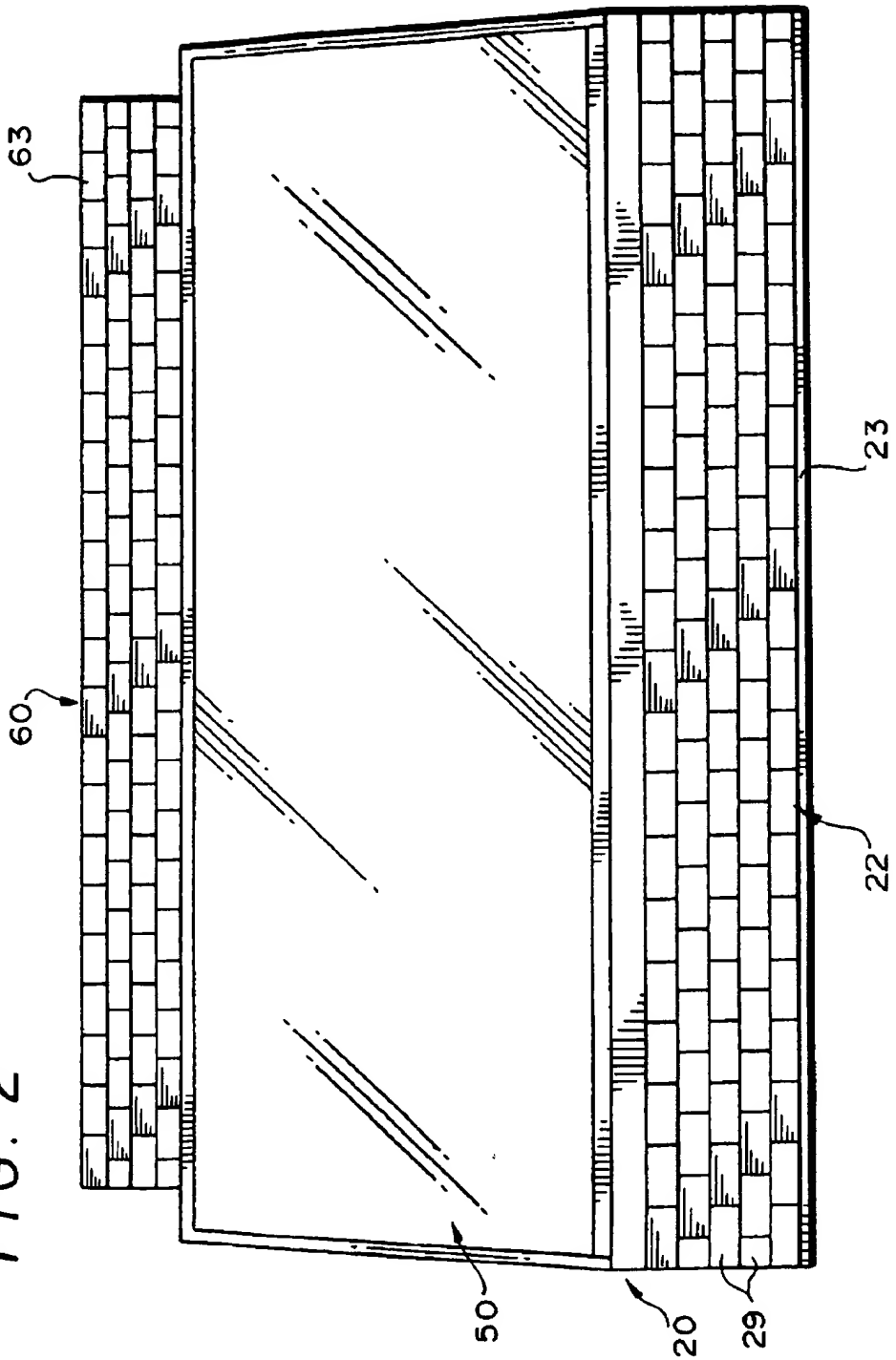


FIG. 2

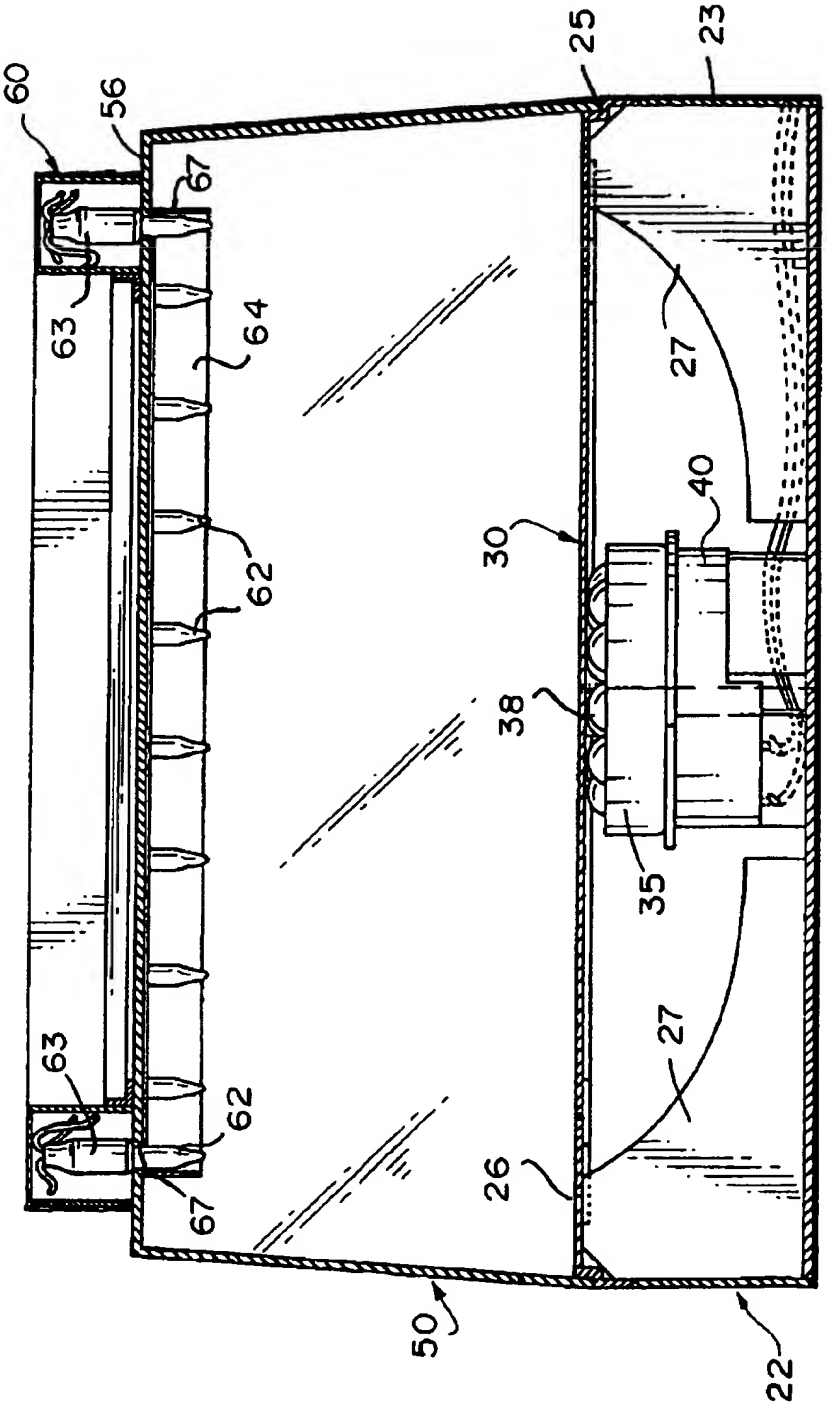


FIG. 3

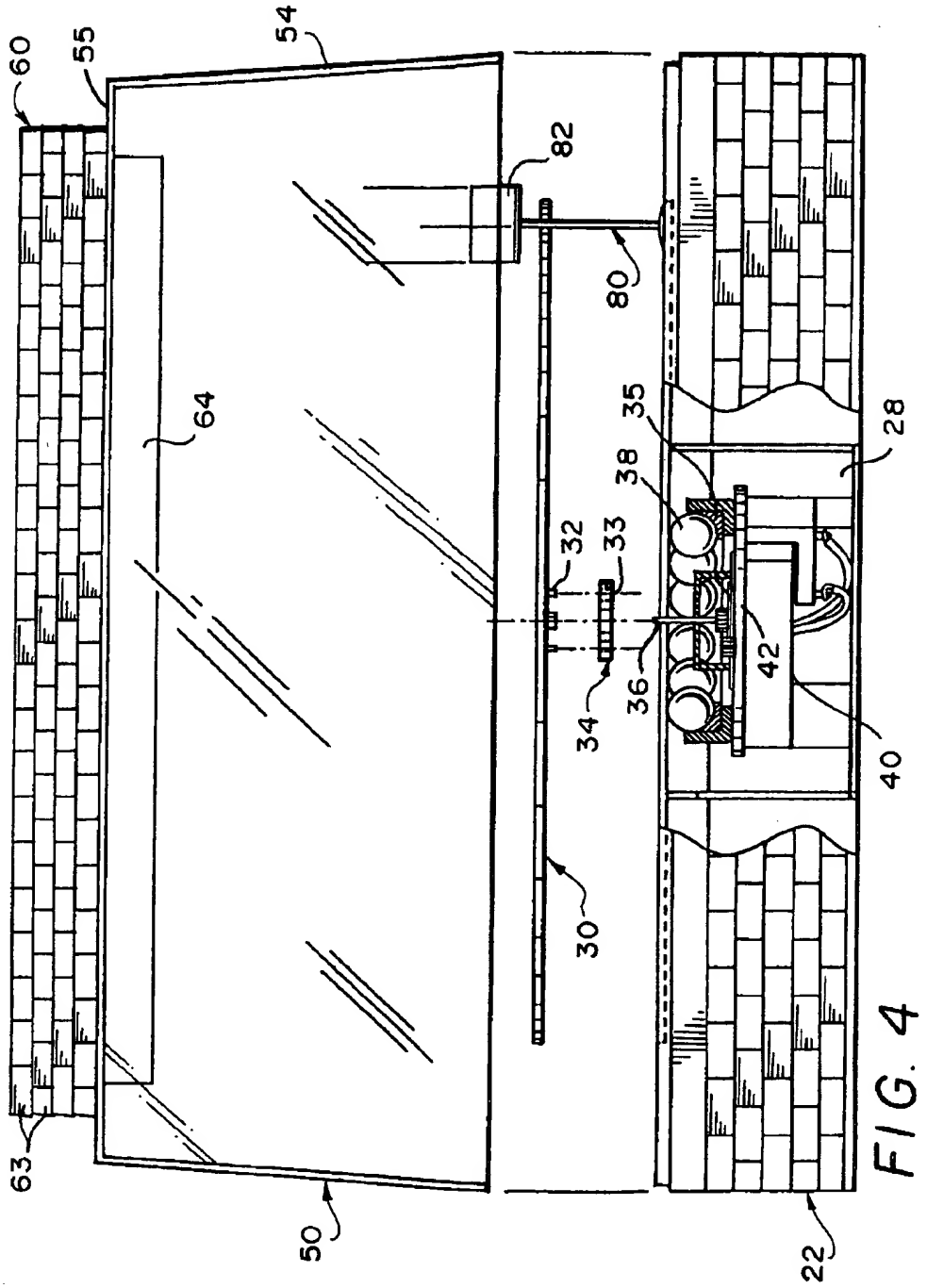


FIG. 4

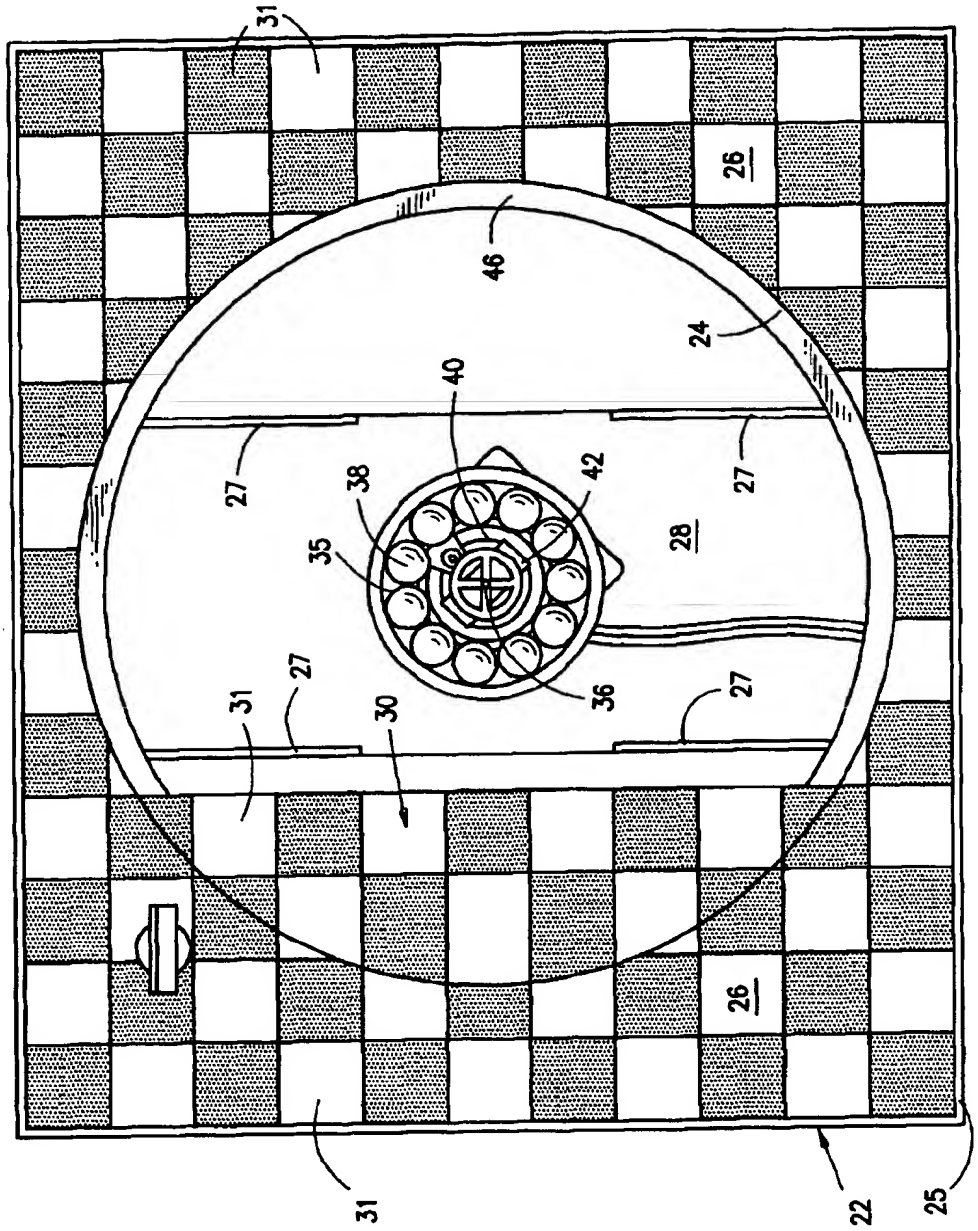


FIG. 5

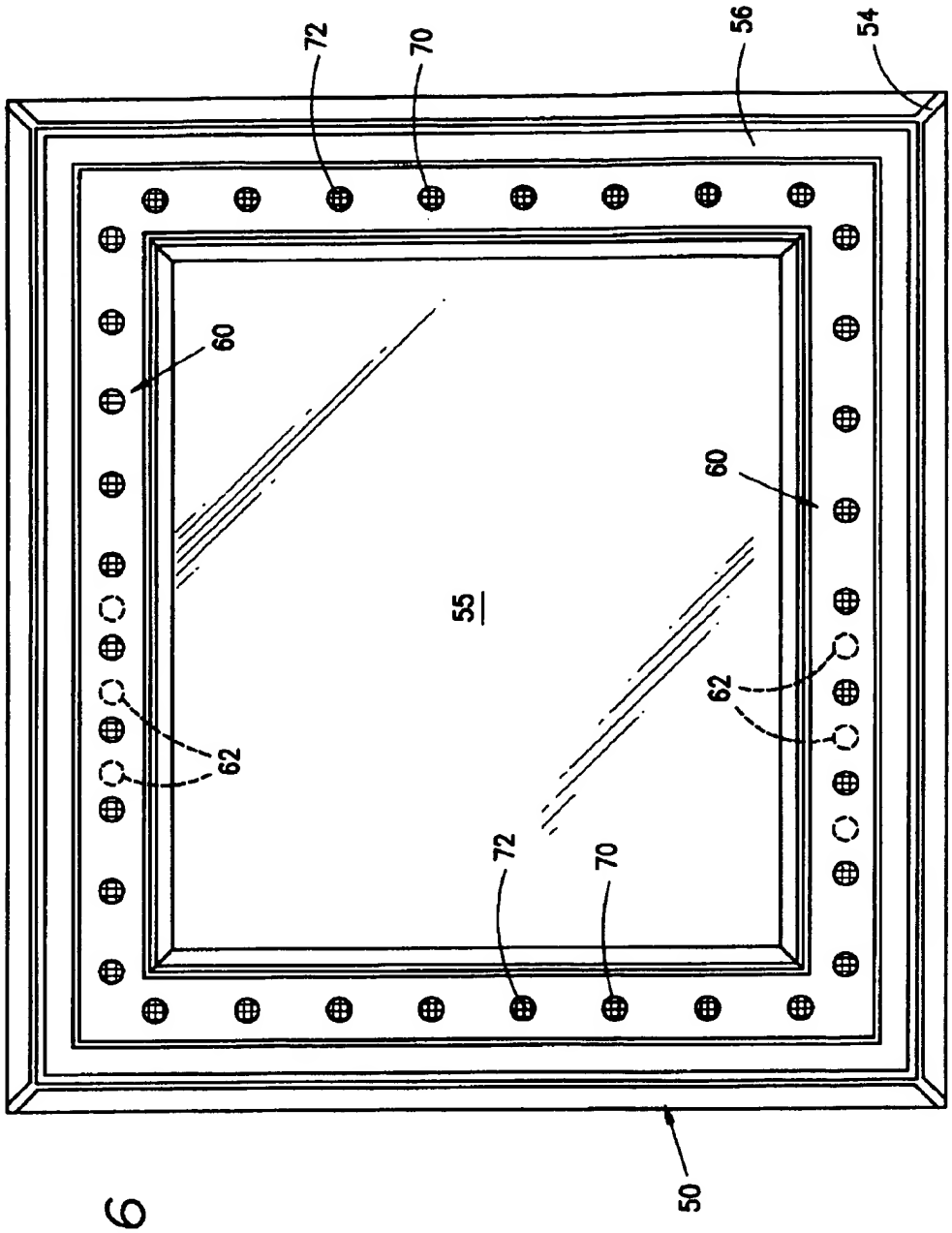


FIG. 6

MODEL DISPLAY CASE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention is generally directed toward display cases, and more particularly, to an illuminated model display case which is decorated to be simulative of a building and which includes a rotating platform for rotating a displayed item.

2. History of the Related Art

The building of scale model automobiles and other items such as scale model airplanes and trains has become a very popular hobby for many individuals. Display cases are known for containing such models. An example of one known type of display case, which is marketed by AMT/Ertl Inc., is a plastic model car display case constructed of a rectangular plastic base with includes a box-like clear plastic lid. This known display does not provide any means for illuminating the displayed object other than by ambient light, nor is there provided any means to enable an observer to view all sides of the displayed object without having to walk around the case, which may be impractical when the case is displayed in a crowded room or near a wall.

In view of the limitations associated with the known devices for displaying items, particularly models, there has been a need for a new display case which includes means for illuminating the displayed item and which avoids the necessity of walking around the entire case to view all sides of the displayed item.

SUMMARY OF THE INVENTION

The present invention has been made in view of the above described and other limitations of known cases for displaying items such as scale models.

It is an object of the present invention to provide a model display case which is decorated to be outwardly simulative of a building such as a vintage automobile dealership.

It is yet another object of the present invention to provide a model display case which features an integral means for illuminating the item being displayed.

It is yet another object of the present invention to provide a model display case featuring a means for rotation of the item being displayed to enable viewing of the item from all sides without an observer having to move around the case.

Additional objects and advantages of the present invention will become apparent from the detailed description which follows, particularly when considered in conjunction with the accompanying drawing figures.

To achieve the objects of the present invention as described herein, the model display case, in accordance with preferred embodiments of the invention, comprises a model display case, which may be decorated to be simulative of a building, and which includes a rectangular base with a box-like substantially transparent, and preferably clear, plastic top. The base includes a raised support surface providing a "floor" in which an electrically powered rotating turntable is centrally positioned. The base is preferably patterned on the exterior to resemble the concrete block foundation wall of a building. The box-like top may be trimmed with chrome tape to simulate the stainless steel window frames of a building. Illumination is provided by a plurality of lights preferably mounted into the periphery of the top and camouflaged with a simulated shingled mansard roof. In the simulated ceiling of the case, the lights are screened from view from the outside by overhead partitions that also serve as reflectors to increase interior light. Screen-covered vents

are preferably provided to allow for dissipation of heat produced by the lights from the interior of the case to the outside environment. The simulated floor of the case may be patterned to simulate a showroom floor such as by painting in a black-and-white checkerboard pattern. Various insignia can be added to the case to simulate a vintage automobile showroom, making the case particularly suitable for displaying model cars. Similarly, the case could be decorated as a simulated flight deck for displaying model airplanes or as a simulated roundhouse for displaying model trains.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. **1** is a perspective view from above of the model display case partially cut away to show the position of lights all in accordance with the present invention;

FIG. **2** is a front plan view of the model display case of FIG. **1**;

FIG. **3** is a front cross-sectional view of the model display case of FIG. **1**;

FIG. **4** is a front partially exploded, partial cross-sectional view of the model display case of FIG. **1**;

FIG. **5** is a top view of a portion of the turntable and base of the model display case partially showing a checkerboard patterned floor, all in accordance with the present invention; and

FIG. **6** is a top plan view of the model display case of FIG. **1**.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to FIG. **1**, a preferred embodiment of a model display case in accordance with the present invention is shown by reference numeral **20** and includes a rectangular base **22**, a rotating turntable **30** centrally located within the base **22**, and a clear transparent cover **50**, each of which is described in more detail below.

The base includes side walls **23** which extend upwardly from a bottom wall to an inwardly extending ledge or shoulder **25**. The base also has an upper wall **26** having a circular opening **24** therein FIG. **5**, in which the turntable **30** is cooperatively aligned. The upper wall **26** and the turntable **30** combine to simulate a showroom "floor" onto which scale models or other objects may be placed for display.

The upper wall **26** is supported by a plurality of support gussets **27**, as shown in FIG. **3**, which are mounted within a chamber **28** defined within the base **22**.

The exterior of the base **22** is preferably decorated or patterned to resemble a brick or block wall including simulated blocks **29**.

Now referring particularly to FIGS. **3** and **4**, the turntable **30** is positioned centrally within the base **22** to support and rotate scale models (not shown) or other objects placed thereon for display. The top of the turntable **30** is co-extensive with the upper surface **26** of the base and substantially fills the circular opening **24** therein. The surface **26** and turntable **30** combine to create a simulated floor of the case **20** which may be decorated, as in FIG. **5**, with a black-and-white checkerboard pattern **31**. In a particularly preferred embodiment, an approximately nine and one-half inch diameter turntable is utilized to enable the display of popular 1/24 and 1/25 scale models.

The turntable **30** may be caused to rotate using a suitable drive system. A preferred drive system includes a plurality

of studs **32** which extend from the bottom of the turntable **30** and which fit within slots **33** in a drive wheel **34**, which itself fits over a drive shaft **36**. Preferably a plurality of ball bearings **38** support the turntable from below while allowing the turntable freedom to rotate smoothly. The ball bearings are supported in a circular track or race **35**.

A motor such as a clock motor **40** (FIG. **4**) drives the drive shaft **36**. The gearing ratio is selected to be suitable to obtain a desired rate of rotation for the turntable **30**. A drive shaft stabilizer tower **42** is preferably included to provide support and stabilization to the drive shaft **36**. The motor is powered by batteries (not shown) mounted within a battery housing **48** or alternatively by conventional alternating power current. The turntable is stabilized by an annular low friction lip **46** which provides support from below to the turntable's circumference, see FIG. **5**.

The cover **50** is preferably box-shaped to make it easier to cover models contained within the case. In one alternative, the could be flat and the base could include upright walls which the cover could rest on. A substantial portion of the cover **50** should be transparent to enable viewing from outside of the case. Chrome tape may be added to the exterior of the top **50** to simulate stainless steel window frames **54**. The lower edge **51** of the cover seats on the ledge **25** of the base.

A generally continuous rectangular hollow and inverted U-shaped extension **60** is provided on the clear top **55** of the cover **50** and adjacent the side edges **56** thereof to contain a light source means for illuminating the interior of the display case. The illuminating means preferably includes a plurality of low wattage lights **62** which are mounted to lamp bases **63** housed within the extension **60**, preferably along the entire inner periphery or length thereof. In the preferred embodiment, the lights are each three and one-half volts and extend through spaced openings **67** in the top **55** of the cover as shown in FIG. **3**. Power for the lights may be supplied by batteries (not shown) or through a power cord connected to a suitable source of either AC or DC power. A generally continuous vertical light reflector **64** extends below the extension **60** and acts to obscure the lights from view from outside of the case. The reflector deflects light onto the simulated "floor" and onto the object being displayed. As shown, the exterior of the extension may be decorated to simulate a shingled mansard roof **63**.

As best seen in FIGS. **1** and **6**, a plurality of heat vents **70** are provided in spaced relationship through an upper surface **66** of the extension **60** to ventilate heat produced by the lights **62** from within the interior of the display case to outside thereof. The vents **70** are preferably spaced intermediate each light **62** so as to be substantially adjacent thereto. The use of the vents **70** prevents the temperature of the interior of the case from exceeding approximately 80° F. Each vent opening is also preferably covered by a screen **72** to prevent dust and dirt from entering the display case.

When a model is displayed in the case **20** on the rotating turntable **30** with the lights **62** turned on, the light appears to dance on reflective surfaces of the turning model producing a very alluring effect to a viewer.

In order to provide pertinent information or statistics with respect to a model being displayed within the case, in the preferred embodiment, the case also includes a display stand **80** which may in the form of an easel in order to support a display card **82**. The display stand is mounted on the upper wall **26** or "floor" of the base.

Although the display case has been described for use for displaying model cars and the like, the case can be altered to display other models, such as model trains or aircraft. In such cases, the base and cover would be simulated to form either a round house for trains or possibly a flight deck for airplanes.

The foregoing description of the preferred embodiments of the invention has been presented to illustrate the principles of the invention and not to limit the invention to a particular embodiment as illustrated. Although the invention is described with respect to preferred embodiments, modifications thereto will be apparent to those skilled in the art. It is intended that the scope of the invention be defined by all of the embodiments encompassed within the following claims and any and all equivalents thereof.

What is claimed is:

1. A model display case having an interior for displaying models comprising:

a base having an upper surface with an opening therein;

a turntable having a top surface for supporting the models being displayed, said turntable mounted within said opening in said base;

a drive means mounted in said base for rotating said turntable;

a transparent cover mounted above said base and providing a view from outside of the case of the interior of the display case and a view of displayed models therein, said cover including a generally continuous extension extending from an upper surface thereof and which defines an inverted generally U-shaped channel; and

a plurality of light means mounted in spaced relationship with respect to one another within said extension for illuminating the interior of the display case and for illuminating models being displayed.

2. The model display case of claim **1** including a plurality of vent openings provided in spaced relationship through said extension, said vent openings providing for ventilation of heat from said plurality of light means mounted within said extension.

3. The model display case of claim **2** including screen means mounted at each of said vent openings in said extension for preventing particles from entering through said vent openings into the display case.

4. The model display case of claim **3** including a vent opening spaced intermediate each of said plurality of light means.

5. The model display case of claim **4** including a reflector extending from said extension inwardly of said cover for reflecting light into the display case.

6. The model display case of claim **5** in which each of said light means is of a size to be recessed relative to said extension so as to be obscured from direct view from outside the display case by said reflector.

7. The model display case of claim **6** wherein said turntable includes a top surface, said top surface being co-extensive with said upper surface of said base, and each of said upper surface of said base and said top surface of said turntable having a similar design pattern applied thereto.

8. The model display case of claim **7** in which said pattern is a checkerboard pattern.

9. The model display case of claim **7** in which said drive means for rotating said turntable includes a motor having a drive shaft, means for connecting said drive shaft to said

turntable, and bearing means spaced outwardly from said drive shaft for supporting a lower surface of said turntable.

10. The model display case of claim 9 including an annular support lip mounted within said base, said annular lip being formed of a low friction material extending upwardly so as to be engageable with said turntable to provide stabilization for said turntable.

11. The model display case of claim 1 including a display stand mounted within the display case to said upper surface of said base.

12. The model display case of claim 1 in which said base has an exterior surface simulated to form a plurality of block elements and said extension has an outer surface simulated to form a tiled roof.

* * * * *